

We claim:

1. An imaging module for a still digital image capturing device, comprising:
an electronic imaging sensor device comprising a plurality of pixel elements;
and
an electronically actuatable shutter device comprising a plurality of
individually addressable and actuatable shutter elements, each of said plurality of
individually addressable shutter elements substantially corresponding to at least one
of said plurality of pixel elements.
2. The apparatus of claim 1, wherein said imaging sensor device comprises a
two-dimensional array of pixel elements and said shutter device comprises a LCD
element comprising a two-dimensional array of individually addressable and
actuatable shutter elements corresponding to said two-dimensional array of pixel
elements.
3. The apparatus of claim 1, wherein said shutter device comprises a LCD
element comprising a two-dimensional array of individually addressable and
actuatable shutter elements and wherein a pixel unit of said imaging module
comprises:
a first combination polarizing shutter element and pixel element, with said first
polarizing shutter element being of a first polarization orientation; and
a second combination polarizing shutter element and pixel element, with said
second polarizing shutter element being of a second polarization orientation that is
substantially orthogonal to said first polarization orientation;
wherein said pixel unit is individually addressable and actuatable.

4. The apparatus of claim 1, wherein said shutter device comprises a microelectromechanical shutter element comprising a two-dimensional array of individually addressable and actuatable shutter elements.

5. The apparatus of claim 1, further comprising a memory including an address storage capable of storing one or more shutter element addresses.

6. The apparatus of claim 1, further comprising a memory including a pattern storage capable of storing one or more shuttering patterns that specify a plurality of shutter addresses of shutter elements to be actuated.

7. The apparatus of claim 1, further comprising a memory including a pattern storage capable of storing one or more shuttering patterns that specify a plurality of exposure time periods corresponding to a plurality of shutter elements to be actuated.

8. The apparatus of claim 1, wherein said shutter device is formed on and is substantially co-planar with said imaging sensor device.

9. The apparatus of claim 1, wherein said shutter device is assembled with and substantially co-planar with said imaging sensor device.

10. An imaging module for a still digital image capturing device, comprising:
an electronic imaging sensor device comprising a two-dimensional array of pixel elements; and

an electronically actuatable shutter device comprising a two-dimensional array of individually addressable and actuatable shutter elements formed on or assembled with and substantially co-planar with said imaging sensor device, each of said two-dimensional array of individually and actuatable addressable shutter elements substantially corresponding to at least one of said two-dimensional array of pixel elements.

11. The apparatus of claim 10, wherein said shutter device comprises a LCD element comprising a two-dimensional array of individually addressable and actuatable shutter elements and wherein a pixel unit of said imaging module comprises:

a first combination polarizing shutter element and pixel element, with said first polarizing shutter element being of a first polarization orientation; and

a second combination polarizing shutter element and pixel element, with said second polarizing shutter element being of a second polarization orientation that is substantially orthogonal to said first polarization orientation;

wherein said pixel unit is individually addressable and actuatable.

12. The apparatus of claim 10, wherein said shutter device comprises a microelectromechanical shutter element comprising a two-dimensional array of individually addressable shutter elements.

13. The apparatus of claim 10, further comprising a memory including an address storage capable of storing one or more shutter element addresses.

14. The apparatus of claim 10, further comprising a memory including a pattern storage capable of storing one or more shuttering patterns that specify a plurality of shutter addresses of shutter elements to be actuated.

15. The apparatus of claim 10, further comprising a memory including a pattern storage capable of storing one or more shuttering patterns that specify a plurality of exposure times corresponding to a plurality of shutter elements to be actuated.

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16. A light shuttering method for a still image capturing device, comprising the steps of:

providing an electronic imaging sensor device comprising a plurality of pixel elements; and

providing an electronically actuated shutter device comprising a plurality of individually addressable and actuatable shutter elements, each shutter element substantially corresponding to at least one of said plurality of pixel elements.

17. The method of claim 16, wherein the providing said shutter device step comprises forming said shutter device on said imaging sensor device.

18. The method of claim 16, wherein the providing said shutter device step comprises providing a two-dimensional array of individually addressable shutter elements, wherein a pixel unit of said imaging sensor device is individually addressable, wherein a first shutter element of said pixel unit polarizes light according to a first polarization orientation and a second shutter element of said pixel unit polarizes light according to a second polarization orientation that is substantially orthogonal to said first polarization orientation, and wherein the method provides a substantially non-polarized light to said imaging sensor device.

19. The method of claim 16, further including a step of storing a shutter actuation pattern that specifies a plurality of shutter elements to be actuated during an image capture.

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20. The method of claim 16, further including a step of storing a shutter actuation pattern that specifies a plurality of exposure time periods for a corresponding plurality of shutter elements.

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